

WHAT IS CLAIMED IS:

1. An electronic brightness control circuit for a display wherein the display brightness changes uniformly to the cognizance of a user as the user adjusts the display brightness.

5 2. An apparatus which provides a uniformly-varying brightness control for a display screen, comprising:

a brightness control device;

a digital input representative of a state of the brightness control device;

and

10 an exponential brightness control circuit responsive to the digital input for providing an output current to the display screen, so as to control brightness of said display screen, wherein the output current is exponentially related to the digital input.

15 3. An apparatus as defined in Claim 2, wherein the digital input further comprises a plurality of digital inputs.

4. An apparatus as defined in Claim 2, wherein the output current further comprises a plurality of output currents.

5. An apparatus which provides a uniformly-varying brightness control for a display screen, comprising:

20 a digital input;

an attenuator which receives the digital input and a reference voltage and provides an attenuated voltage output based on the digital input;

a voltage-to-current converting amplifier circuit which converts the attenuated voltage to current in response to the digital input; and

25 a current mirror circuit connected to an LED array so as to provide current to the LED array that is exponentially related to the digital input.

6. An apparatus as defined in Claim 5, wherein the digital input further comprises a plurality of digital inputs.

7. An apparatus as defined in Claim 6, wherein the current mirror circuit  
30 comprises a plurality of current mirror circuits, each of said plurality of circuits

connected to the LED array so as to provide current that is exponentially related to at least one of the plurality of digital inputs to a respective portion of the LED array.

8. An apparatus as defined in Claim 5, further comprising an input trimming resistor network.

5 9. A method of providing a uniformly-varying brightness control for a display screen, the method comprising:

applying a reference voltage and a digital input to a circuit;  
attenuating the reference voltage based on the digital input;  
converting the attenuated voltage to a converted current; and

10 providing an output current for controlling brightness of the display screen, said output current being related to the converted current and exponentially related to the digital input.

10. A method as defined in Claim 9, wherein the digital input further comprises a plurality of digital inputs.

15 11. A control apparatus comprising means for controlling brightness of a display screen device wherein the controlling means provides current to said display screen device, said current having a magnitude that is substantially exponentially related to digital input to said display screen device.

20 12. A brightness control device for a display screen wherein, in response to a brightness control signal, the brightness control device produces a display control signal which compensates for a difference between a perceived display screen brightness and an actual display screen brightness.

13. A brightness control device as defined in Claim 12, wherein the brightness control device is implemented using discrete components.

25 14. A brightness control device as defined in Claim 12, wherein the brightness control device is implemented using monolithic integration.

15. An apparatus which provides a uniformly-varying brightness control for a display screen, comprising:

30 means for applying a reference voltage to a circuit;  
means for applying a digital input to a circuit;  
means for attenuating the reference voltage based on the digital input;

means for converting the attenuated voltage to current; and

means for providing at least one output current for controlling brightness of the display screen, in response to the digital input, wherein the at least one output current is exponentially related to the digital input.

5           16.     An apparatus as defined in Claim 15, wherein the means for providing at least one output current comprises means for providing a plurality of output currents.

          17.     An apparatus as defined in Claim 16, wherein the means for applying a digital input comprises means for applying a plurality of digital inputs to the circuit.

10           18.     An apparatus as defined in Claim 17, wherein each of at least two of the plurality of digital inputs is related to a different one of at least two of the plurality of output currents.

          19.     An apparatus as defined in Claim 18, wherein each of the at least two of the plurality of output currents defines a control signal which controls brightness of a different portion of the display screen.

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